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EXAMINER	
SOL, ANTHONY M	

ART UNIT	PAPER NUMBER
2662	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/964,478	TZOU ET AL.
	Examiner	Art Unit
	Anthony Sol	2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Trachewsky et al (US 20010055311A1), hereafter Trachewsky.

Regarding claim 1,

Trachewsky discloses a collision detection method on a communications network between two or more transmitting stations (multiple access communications system) at one of the transmitting stations (with a common channel) (Pg. 2, paragraph 11, lines 1-4; claim 1 – collision detection method for use in a multiple access communications system with a common channel).

Trachewsky discloses that a header format (predetermined segment) for the transmitted frame (signal) is provided. It is inherent in the reference that the destination is the common channel (Pg. 2, paragraph 11, lines 4-5; claim 1 – transmitting a signal including a predetermined segment to common channel).

Trachewsky discloses a sample sequence is received (receiving signal) and a least-squares channel estimate of an echo channel between a station transmitter and a station receiver (common channel) is computed from the received sample sequence and a transmitted preamble (Pg. 2, paragraph 11, lines 13-16; claim 1 – receiving signal from common channel).

Trachewsky discloses that the estimate of received samples of the source address field of the header format (predetermined segment) of the transmitted frame (signal) is subtracted (processing) from actual received samples corresponding to the source address field to produce a source field error vector (error term) low-pass filtered signal (Pg. 2, paragraph 11, lines 20-24; claim 1 – processing signal to obtain error term associated with predetermined segment).

Trachewsky discloses computing (performing a mathematical operation) an estimate of error power (index value) in the second and third copies of the preamble by (error term is the following calculation) subtracting actual received samples of the second and third copies of the preamble from the estimate of the received samples of the second and third copies of the cyclic preamble (Pg. 2, paragraph 11, lines 34-38; claim 1 – performing a mathematical operation on error term to obtain index value).

Trachewsky discloses that a collision is declared if an *absolute value* of an estimate of 10*log10 of the error power (index value) in the second and third copies of the preamble minus 10*log10 of the estimate of the error power in the third and fourth copies of the preamble exceeds a first threshold (Pg. 2, paragraph 11, lines 47-51;

claim 1 – determining whether a collision occurs by comparing index value with a threshold value).

Regarding claim 2,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses the header format (predetermined segment) includes a cyclic (constant sequence) preamble wherein a plurality of identical copies of a preamble symbol sequence are transmitted sequentially (Pg. 2, paragraph 11, lines 5-6, 10-13; claim 2 – the predetermined segment is a preamble of a packet with a constant sequence).

Regarding claim 6,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses computing an estimate of error power (index value) in the second and third copies of the preamble by subtracting actual received samples of the second and third copies of the preamble from the estimate of the received samples of the second and third copies of the cyclic preamble, then squaring a norm (mean square value) of a first resulting vector (error term)(Pg. 2, paragraph 11, lines 34-39; claim 6 – index value is a mean square value of error term).

Regarding claim 8,

Trachewsky discloses computing an index value by computing an *absolute value* of an (error term is the rest of the sentence) estimate of 10*log10 of the error power (already in the form of a *mean*) in the second and third copies of the preamble minus 10*log10 of the estimate of the error power (already in the form of a mean) in the third and fourth copies of the preamble (Pg. 2, paragraph 11, lines 47-50; claim 8 – index value is a mean absolute value of error term).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 13, 16, 17, 18, and 21- 23 are rejected under U.S.C. 103 (a) as being unpatentable over Trachewsky.

Regarding claim 13,

Trachewsky discloses a collision detection method on a communications network between two or more transmitting stations (multiple access communications system) at one of the transmitting stations (with a common channel) (Pg. 2, paragraph 11, lines 1-4).

Trachewsky does not disclose expressly an apparatus embodiment of the invention on page 2, paragraph 11, lines 1-4.

Trachewsky does disclose in Figure 30, an apparatus with a transmit functionality portion 500, counterpart receive functionality portion 900, V1 compatibility transmit and receive functionality portions 910, 920, MAC functionality portion 1000 for both V1 and V2 modes, and 2-4 wire hybrid portion 930. Included in MAC 1000 is carrier sense functionality portion 1100, collision detection functionality portion 1200, and CSMA/CD collision resolution/rx frame synchronization functionality portion 1300 (Pg. 12, paragraph 161, lines 1-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky's disclosure concerning the method of a collision detection method, an apparatus embodiment of his invention to obtain circuitry for implementing a cost-effective collision detection method (Claim 13 – collision detection apparatus for use in multiple access communication system between a station and a common channel).

Trachewsky discloses a signal processing method for receiving a signal including a predetermined segment (header format) (Pg. 2, paragraph 11, lines 4-5) and comparing signal with a predetermined signal to obtain error term associated with predetermined segment. Specifically, Trachewsky discloses that the estimate of received samples of the source address field of the header format (predetermined segment) of the transmitted frame (signal) is subtracted (processing) from actual

received samples corresponding to the source address field to produce a source field error vector (error term) low-pass filtered signal (Pg. 2, paragraph 11, lines 20-24)

Trachewsky does not disclose expressly an apparatus embodying the above aforementioned method.

Trachewsky does disclose in Fig. 30, a CSMA/CD collision resolution/rx frame synchronization functionality portion 1300 (Pg. 12, paragraph 161, lines 9-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky's disclosure concerning the signal processing method, an apparatus embodiment of his invention to obtain a signal processing circuitry that will generate error term to be further analyzed for collision detection (Claim 13 – signal processing device for receiving signal including a predetermined segment, and comparing signal with predetermined signal to obtain error term associated with predetermined segment).

Trachewsky discloses performing a mathematical operation on error term to obtain index value. Specifically, Trachewsky discloses computing (performing a mathematical operation) an estimate of error power (index value) in the second and third copies of the preamble by (error term is the following calculation) subtracting actual received samples of the second and third copies of the preamble from the estimate of the received samples of the second and third copies of the cyclic preamble (Pg. 2, paragraph 11, lines 34-38)

Trachewsky does not disclose expressly a mathematical operator (device) electrically connected to signal processing device to perform the mathematical operation.

Trachewsky does disclose in Fig. 30, a MAC (Media Access Controller) functionality portion 1000. Included in MAC 1000 is carrier sense functionality portion 1100, collision detection functionality portion 1200, and CSMA/CD collision resolution/rx frame synchronization functionality portion 1300 (Page 12, paragraph 161, lines 6-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky's disclosure concerning the mathematical operation on error term to obtain index value, an apparatus embodiment of his invention to obtain a mathematical operator that will generate an index value to be further analyzed for collision detection (Claim 13 – mathematical operator electrically connected to signal processing device for mathematically operating error term to obtain index value).

Trachewsky discloses a method for determining whether a collision occurs by comparing index value with threshold value. Specifically, Trachewsky discloses that a collision is declared if an *absolute value* of an estimate of 10*log10 of the error power (index value) in the second and third copies of the preamble minus 10*log10 of the estimate of the error power in the third and fourth copies of the preamble exceeds a first threshold (Pg. 2, paragraph 11, lines 47-51)

Trachewsky does not disclose expressly a collision detection device electrically connected to mathematical operator for determining whether a collision occurs according to index value.

Trachewsky does disclose in Fig. 30, a collision detection 1200 that detects the presence of a valid frame transmission (Page 12, paragraph 161, lines 16-17).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky's disclosure concerning the method for determining whether a collision occurs by comparing index value with threshold value, an apparatus embodiment of his invention to obtain a collision detection device to determine whether a collision occurred (Claim 13 – collision detection device electrically connected to mathematical operator for determining whether a collision occurs according to index value).

Regarding claim 16,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Trachewsky discloses that Home Phoneline Network Alliance (HPNA) is one example of a technology that interconnects multiple computers located in a local area (multiple access communication system). Specifically, he discloses a cable modem having a HPNA V2 (Version 2.0) transceiver (Pg. 1, paragraph 4, lines 11-16, paragraph 9, line 1; claim 16 – multiple access communication system is a HPNA 2.O system).

Regarding claim 17,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Referring to Fig. 6, Trachewsky discloses header 610 (predetermined segment) includes a preamble (PREAMBLE64) 612 that is defined as a repetition of four 16 symbol sequences, TRN16 (Pg. 7, paragraph 119, lines 13-15; claim 17 – predetermined segment includes four repetitive TRN16 sequences).

Regarding claim 18,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Trachewsky discloses computing an estimate of error power (index value) in the second and third copies of the preamble by subtracting actual received samples of the second and third copies of the preamble from the estimate of the received samples of the second and third copies of the cyclic preamble, then squaring a norm (mean square value) of a first resulting vector (error term)(Pg. 2, paragraph 11, lines 34-39)

Trachewsky does not disclose that the mathematical operator is a mean-square-value *calculator.*

Trachewsky does disclose in Fig. 30, a MAC (Media Access Controller) functionality portion 1000. Include in MAC 1000 is carrier sense functionality portion 1100, collision detection functionality portion 1200, and CSMA/CD collision resolution/rx frame synchronization functionality portion 1300 (Page 12, paragraph 161, lines 6-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky's disclosure regarding the index value being the square value of error term, a mean-square-value calculator to obtain a value to compare against a threshold value in determining whether collision occurred (Claim 18 – mathematical operator is a mean-square-value calculator).

Regarding claim 21,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Trachewsky discloses that a collision is declared if an *absolute value* of an estimate of 10*log10 of the error power (index value) in the second and third copies of the preamble minus 10*log10 of the estimate of the error power in the third and fourth copies of the preamble exceeds (greater than) a first threshold (Pg. 2, paragraph 11, lines 47-51; claim 21 – determines that collision occurs when index value is greater than threshold value).

Regarding claim 22,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Trachewsky discloses that his collision detection device can be provided at the receiver end of station (Page 8, paragraph 138, lines 55-59; claim 22 – apparatus mounted at a receiver end of station).

Regarding claim 23,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Referring to Fig. 30, Trachewsky discloses that transmitter 500 performs the signal transmitting functions (Pg. 8, paragraph 138, lines 55-58; claim 23 – signal is outputted from transmitter end of station).

5. Claims 3-5, 14, 15, and 20 are rejected under 35 U.S.C 103 (a) as being unpatentable over Trachewsky in view of the prior art cited by the applicant.

Regarding claim 3,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses a constant sequence (a cyclic preamble) and a predetermined segment (header format) as discussed above regarding claim 1.

Trachewsky does not disclose obtaining an error term by equaling the signal and comparing the equalized packet with a predetermined sequence.

The prior art disclosed in the application on page 2, paragraph 5, lines 7-13 of the specification and Fig. 3 of the drawings section disclose that a signal is equalized and processed to obtain an error term and the equalized preamble is compared with the originally received one (predetermined sequence) in the match filter.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the steps of equaling the received signal and comparing the equalized packet with a predetermined sequence to obtain a usable signal to be further analyzed (Claim 3 – error term is obtained by equaling signal, and comparing equalized packet with predetermined sequence).

Regarding claim 4,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses that Home Phoneline Network Alliance (HPNA) is one example of a technology that interconnects multiple computers located in a local area (multiple access communication system). Specifically, he discloses a cable modem having a HPNA V2 (Version 2.0) transceiver (Pg. 1, paragraph 4, lines 11-16, paragraph 9, line 1; claim 4 – multiple access communication system is a HPNA 2.O system).

Regarding claim 5,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Referring to Fig. 6, Trachewsky discloses header 610 includes a preamble (PREAMBLE64) 612 that is defined as a repetition (constant sequence) of four 16 symbol sequences, TRN16 (Pg. 7, paragraph 119, lines 13-15; claim 5 – constant sequence is a TRN16 sequence).

Regarding claim 14,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Trachewsky discloses a signal processing device in Fig. 30 (receiver 900) that performs front end processing.

Trachewsky does not explicitly disclose that information data bits and error term is obtained from the signal.

The prior art disclosed in the application on page 2, paragraph 5, lines 9-12 of the specification and Fig. 3 of the drawings section disclose that a signal is processed and error term and information data bits are obtained.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the function of the signal processor to obtain information data bits and error term so that the transmitted frame can be analyzed to determine whether a collision occurs and whether information data bits is allowed to transmit to the common channel (Claim 14 – signal processing device processes signal to obtain information data bits and error term)

Regarding claim 15,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

Referring to Fig. 30, Trachewsky discloses a signal processing device (receiver 900).

Trachewsky does not disclose an equalizer connected to signal processing device for adjusting waveform of signal according to error term.

The prior art disclosed in the application on page 2, paragraph 5, lines 7-12 of the specification and Fig. 3 of the drawings section disclose that a signal is equalized and is further transmitted to the signal processing device where an error term is used to update (adjust) the equalizer's coefficient (waveform) adaptively.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the function of the adaptive equalizer to adjust the waveform of the signal according to the error term to obtain a quality signal to be further analyzed (Claim 15 – equalizer connected to signal processing device to adjust waveform of signal according to error term).

Regarding claim 20,

Trachewsky discloses an apparatus that covers all the limitations of the parent claim.

The prior art disclosed in the application on page 2, paragraph 5, lines 13-16 of the specification and Fig. 3 of the drawings section disclose that a collision detection device is electrically connected to a channel accessing device 15, which controls whether station 10 can use the system channel 20 (common channel) when no collision is determined (Claim 20 – collision detection device electrically connected to channel

access device to allow station to access common channel when no collision is determined).

6. Claim 9 is rejected under 35 U.S.C. 103 as being unpatentable over Trachewsky in view of what is considered conventional in the subject matter area of the invention.

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses squaring a norm (mean square) when he discusses computing an estimate of error power (index value) as stated above (Pg. 2, paragraph 11, lines 38-39).

Trachewsky does not disclose computing an Nth order metric of the error term.

It would be conventional to include in Trachewsky's calculations any Nth order computation of the error term. Calculating the Nth order of a term is routinely done in experimentation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the computation of an Nth order metric of the error term as an alternative method to generate index value in the process of determining collision status (Claim 9 – index value is Nth order metric of error term).

7. Claims 7, 10-12, and 19 are rejected under 35 U.S.C 103 (a) as being unpatentable over Trachewsky in view of Davidson et al (US6246693B1), hereafter Davidson.

Regarding claims 7 and 19,

Trachewsky discloses a method and apparatus that covers all the limitations of the parent claim.

Trachewsky discloses that a collision is declared if a 20*10log10 of a *maximum value* of the norm (mean) of each term of a source field error vector (error term) minus 10*log10 of a greater of the estimate of the error power in the second and third copies of the cyclic preamble and the estimate of the error power in the third and fourth copies of the preamble exceeds a second threshold (Pg. 2, paragraph 11, lines 47-56). It is inherent in the reference that the maximum value is the index value.

Trachewsky does not disclose that the index value is an *absolute* maximum value and that the mathematical operator is a maximum-absolute-value selector.

Davidson discloses a method of computing an estimate of the magnitude by calculating the *maximum of the absolute values* of the real and imaginary parts (Pg. 23, column 1, lines 3-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the computation of maximum absolute value and an maximum-absolute-value calculator to obtain the invention as specified in claims 7 and 19, respectively, as an alternative method and embodiment to generate an index value in the process of determining collision status (Claim 7 – the index value is a maximum absolute value of error term; claim 19 – the mathematical operator is a maximum-absolute-value calculator).

Regarding claims 10-12,

Trachewsky discloses a method that covers all the limitations of the parent claim.

Trachewsky discloses a method of performing a mathematical operation on the error term as discussed above regarding claim 1.

Trachewsky does not disclose performing a mathematical operation on the real and imaginary parts, or in combination of them.

Davidson discloses a method of performing a mathematical operation by calculating the maximum of the absolute values of the *real and imaginary parts* (Column 23, lines 3-5; claim 10 – error term is mathematically operated by using real part).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Trachewsky the operation on the real and imaginary parts to obtain practical numerical data to determine whether collision occurred (Claim 11 – error term is mathematically operated by using imaginary part; claim 12 – error term is mathematically operated by using a combination of real and imaginary parts).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMS

04-26-2005

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